

Advanced Silicone-based Coatings for Flexible Fabric Applications, Phase II

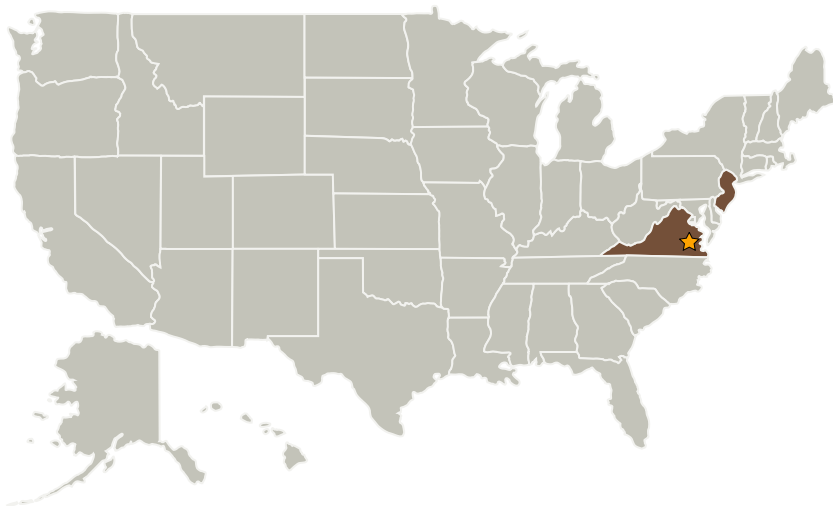
Completed Technology Project (2006 - 2008)



Project Introduction

Silicone coatings are the system of choice for inflatable fabrics used in several space, military, and consumer applications, including airbags, parachutes, rafts, boat sails, and inflatable shelters. Commercial silicone coatings with improved mechanical, thermal and physical gas barrier properties are needed for a broad range of space, military, and commercial applications. The phase I program has demonstrated that addition of small amounts of nanostructured additives enhances tear strength, tensile strength, and hardness without significantly degrading other important properties, thermal stability, puncture resistance and air permeability of commercial silicone coatings. It was also shown that properties of coatings are strongly correlated with the chemistry and composition of nanostructured additives. The significance of the Phase I innovation is that commercially used coating formulations were utilized as the starting material, making it easier to be adopted in practice. Success in Phase I has enabled us to put together a strong Phase II team, composed of commercial silicone coating applicators, an airbag assembly developer, and a large supplier of silicone coating formulation. The focus of the Phase II program will be to develop nanostructured additives for several different types of commercial silicone coatings to meet their specific application needs. Additionally, nanostructured additive technology will be scaled up, and prototype airbags will be fabricated.

Primary U.S. Work Locations and Key Partners



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Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Center / Facility:

Langley Research Center (LaRC)

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

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Organizations Performing Work	Role	Type	Location
★ Langley Research Center (LaRC)	Lead Organization	NASA Center	Hampton, Virginia
NEI Corporation	Supporting Organization	Industry Small Disadvantaged Business (SDB)	Piscataway, New Jersey

Primary U.S. Work Locations

New Jersey	Virginia
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Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Technology Areas

Primary:

- TX13 Ground, Test, and Surface Systems
 - └ TX13.4 Mission Success Technologies
 - └ TX13.4.6 Ground Analogs for Space/Surface Systems